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JC092 U.S. 60/240521 10/12/00

ASSISTANT COMMISSIONER FOR PATENTS
BOX PROVISIONAL PATENT APPLICATION
Washington, D.C. 20231
Sir:

Transmitted herewith for filing is a <u>provisional</u> patent application under CFR 1.53(c) of:

LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (City/State/Country)
Gvily	Yaniv		Morgan Hill, California, United States

Title: CLIENT-BASED OBJECTIFYING OF HYPERTEXT PAGES

Enclosed are:

[X] ___2___ pages of the specification (including description and claims).

[X] ___5___ sheet(s) of an Appendix A.

[X] Unexecuted verified statement to establish small entity status under 37 CFR 1.9 and CFR 1.27.

Please charge Deposit Account No. 20-1430 as follows:

[X]   Filing fee $____$75.00____

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__2__ extra copies of this sheet are enclosed.

Respectfully submitted,

TOWNSEND and TOWNSEND and CREW LLP

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VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(c)) - SMALL BUSINESS CONCERN

Applicant or Patentee: TopTier Software

Application or Patent No.:

Filed or Issued: / /

Title: CLIENT-BASED OBJECTIFYING OF HYPERTEXT PAGES

I hereby declare that I am:

[ ]   the owner of the small business concern identified below:

[ ]   an official of the small business concern empowered to act on behalf of the concern identified below.

Name of Small Business Concern: TopTier Software

Address of Small Business Concern: 30 Las Collinas Lane

San Jose, CA 95119

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled CLIENT-BASED OBJECTIFYING OF HYPERTEXT PAGES by inventor(s) Yaniv Gvily described in:

[ ]   the specification filed herewith;

[ ]   Application No. _____, filed ___ / / _____;

[ ]   Patent No. _____, issued _____.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern that would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

    *NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

Name:

Address:

[ ] Individual   [ ] Small Business Concern   [ ] Nonprofit Organization

Name:

Address:

[ ] Individual   [ ] Small Business Concern   [ ] Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Person Signing:

Title of Person if Other than Owner:

Address of Person Signing: 30 Las Collinas Lane

San Jose, CA 95119

Signature_____   Date _____

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PROVISIONAL

PATENT APPLICATION
CLIENT-BASED OBJECTIFYING OF HYPERTEXT PAGES

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Entity: Small business concern

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CLIENT-BASED OBJECTIFYING OF HYPERTEXT PAGES

The following documents are provided with this provisional application and incorporated herein by reference:

5

Description of the Invention with Figures: 5 pages

DESCRIPTION OF THE SPECIFIC EMBODIMENTS

10   A description of details and examples of the method and apparatus for the above invention is provided as the integral part of this provisional application.

WHAT IS CLAIMED IS:

1.   A computer implemented method for adding meta-data to textual content on a hypertext page, comprising:

    detecting the occurrence of a first hypertext page at a client machine;

    analyzing the domain name of said first hypertext page;

    associating a template with said first hypertext page based on said domain name;

    scanning the content of said first hypertext page for recognized objects;

    dynamically embedding meta-data of said recognized object into said first hypertext page; and

    storing said meta-data on said client machine.

2.   The computer implemented method of claim 1, further comprising:

    transmitting said content to a server;

    scanning said content at said server; and

    returning a list of recognized objects from said server to said client machine.

3.   The computer implemented method of claim 1, further comprising analyzing existing hyperlinks on said first hypertext page to create hyperrelational links.

4.   The computer implemented method of claim 1, further comprising recognizing data on said first hypertext page by location for said recognized objects.

Client-Based Objectifying of Hypertext Pages

Introduction

Hypertext pages viewed over the World Wide Web are free-form text documents. They are not self descriptive in the way that they do not contain the meaning of the displayed text. It is up to the reader of the site to interpret the text into meaningful information. This all works well for a human reader. However, a machine reading this text (data) is lacking the necessary descriptors (meta-data) to understand what is being displayed.

This document describes a method of analyzing the unstructured data of the hypertext pages, understanding the meta-data behind it and storing this meta-data back into the original hypertext page *on the client's machine*. The meta-data is stored hidden from the user's view so that it is unobtrusive. However, applications that know where to look for this meta-data can easily access and utilize it.

Description

A plug-in plays a center role in the on-the-fly objectifying of web pages. The plug-in listens for the web browser events and each time a web page is loaded by the client, it will analyze its content and attempt to recognize the meta-data behind its elements.

This process is describe below (refer to Figures 1 and 2 for an illustration):

1. The plug-in [201] is in stand-by mode, listening for browser events. When a new page is loaded [314], it proceeds to the next step.
2. The plug-in [201] checks the domain name of the loaded page [211] and using it obtains from the server [203] the template that best matches the viewed web page [315, 316, 331].
3. Based upon this template, the plug-in [201] then utilizes several methods to analyze the content of the page [319].
    a. Scanning of the textual content of the page and looking for known words or phrases. Due to the possible large size of the dictionary, this is usually done on a server. The client transmits the content of the page to the server [317], which returns a list of recognized objects [318].
    b. Analyzing known structure of existing hyperlinks and extending them to become HyperRelational.
    c. Recognizing data by its location on the page.
4. The analysis [319] results in zero or more recognized objects and their location on the page. The plug-in [201] then dynamically embeds [320] the meta-data of these objects into the hypertext page [211] by means of adding hidden tags or attributes or by other means deemed fit by its designers. The original HTML elements now contain meta-data in addition to just data.

Figure 3 shows a sample hypertext page consisting of some text and a hyperlink. Following is the source code used to render that page:

```
<HTML>
<HEAD>
</HEAD>
<BODY>
<A HREF="http://xyz.somewhere.com">Willie Brown</A> has been re-
elected as the mayor of the city and county of San Francisco.
</BODY>
</HTML>
```

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Assume that the analysis process has recognized two objects on the page: Willie Brown and San Francisco. The meta-data of these objects will be embedded into the web page, effectively altering the source code to something like:

```
<HTML>
<HEAD>
</HEAD>
<BODY>
<A HREF="http://xyz.somewhere.com"
META="<PERSON><FIRST>Willie</FIRST><LAST>Brown</LAST></PERSON>">Willie
Brown</A> has been re-elected as the mayor of the city and county of
<SPAN META="<LOCATION><CITY>San
Francisco</CITY><STATE>CA</STATE></LOCATION>">San Francisco</SPAN>.
</BODY>
</HTML>
```

Note that the source is not actually changed but rather the DOM (document object model) of the page is altered and the additional elements are inserted. The DOM is the run-time representation of the web page after it has been parsed by the web browser.

The example above shows one case where an attribute has been added to an existing tag (i.e. the META attribute of the A tag) and one in which a new tag has been added where there had been none before (the SPAN tag). None of these changes has caused the *rendering* of the web page to be altered. The web browser, for the purpose of drawing the page, ignores the additional tags. The user is unaware that any change has been done to the page.

Also note that since the meta-data is stored in XML format, it is quite easily extensible. One may elect to include the country as well as the city and state in the location object. This is quite easily done and does not require alterations and revisions of the meta-data representation scheme (e.g. HRNP links).

If the designer of the analysis tool so desired, he could program it so that it will cause changes in the rendering of the HTML page. For example, one might conceive an analyzer that will automatically add HRNP links where there were none and altering existing hyperlinks to HRNP ones where applicable. One possible implementation may produce the following code:

```
<HEAD>
</HEAD>
<BODY>
<A HREF="hrnp://xyz.myserver.com/person/Willie,+Brown">Willie
Brown</A> has been re-elected as the mayor of the city and county of
<A HREF="hrnp://xyz.myserver.com/city/SF,+CA">San Francisco</A>.
</BODY>
</HTML>
```

Since HRNP links have a rigid structure one must follow, the meta-data is not stored in XML style but rather as part of the HRNP HREF string.
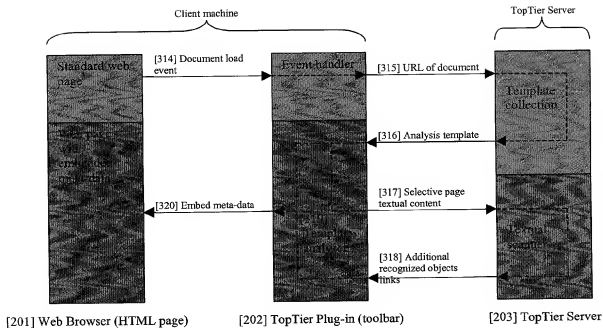
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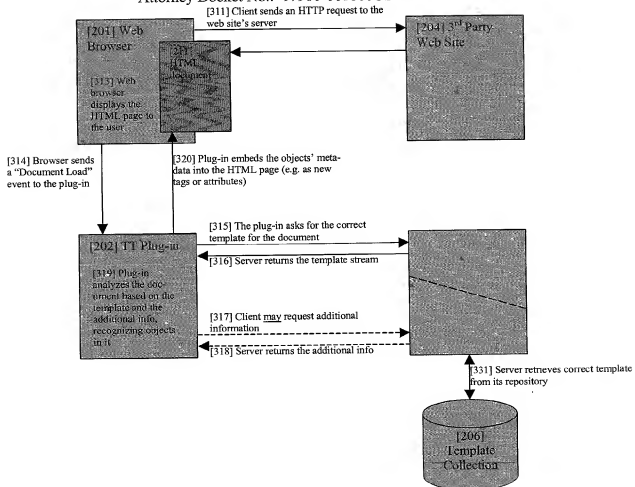

Figure 1: Functional view of the architecture.

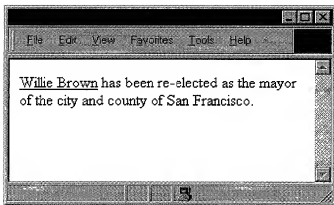**Figure 2:** Component-based view of the architecture.

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Figure 3: Sample hypertext page.

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